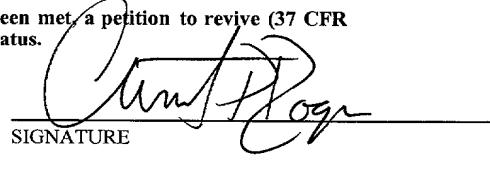


FORM PTO-1390 (Modified) (REV 11-98)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				PX3904USW
INTERNATIONAL APPLICATION NO. PCT/FR99/00695		INTERNATIONAL FILING DATE 25 March 1999		U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 09/647405
TITLE OF INVENTION METERING VALVE		PRIORITY DATE CLAIMED		
APPLICANT(S) FOR DO/EO/US Geralt WILLIAMS				
<p>Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:</p> <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). 4. <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2)) <ul style="list-style-type: none"> a. <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input checked="" type="checkbox"/> has been transmitted by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). 7. <input checked="" type="checkbox"/> A copy of the International Search Report (PCT/ISA/210). 8. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ul style="list-style-type: none"> a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. 9. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 10. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). 11. <input checked="" type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409). 12. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). <p>Items 13 to 20 below concern document(s) or information included:</p> <ol style="list-style-type: none"> 13. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 14. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 15. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 16. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 17. <input type="checkbox"/> A substitute specification. 18. <input type="checkbox"/> A change of power of attorney and/or address letter. 19. <input checked="" type="checkbox"/> Certificate of Mailing by Express Mail 20. <input type="checkbox"/> Other items or information: <p style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Form PCT/RO/101 Form PCT/IB/306 </p>				

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 09/647405	INTERNATIONAL APPLICATION NO. PCT/FR99/00695	ATTORNEY'S DOCKET NUMBER PX3904USW
21. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :		CALCULATIONS PTO USE ONLY
<input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4)		\$970.00 \$840.00 \$690.00 \$670.00 \$96.00
ENTER APPROPRIATE BASIC FEE AMOUNT =		\$840.00
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (e)).		<input type="checkbox"/> 20 <input type="checkbox"/> 30 \$0.00
CLAIMS	NUMBER FILED	NUMBER EXTRA
Total claims	10 - 20 =	0
Independent claims	1 - 3 =	0
Multiple Dependent Claims (check if applicable).		<input type="checkbox"/> \$0.00
TOTAL OF ABOVE CALCULATIONS =		\$840.00
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable).		<input type="checkbox"/> \$0.00
SUBTOTAL =		\$840.00
Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)).		<input type="checkbox"/> 20 <input type="checkbox"/> 30 \$0.00
TOTAL NATIONAL FEE =		\$840.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).		<input type="checkbox"/> \$0.00
TOTAL FEES ENCLOSED =		\$840.00
		Amount to be: refunded \$
		charged \$
<input type="checkbox"/> A check in the amount of _____ to cover the above fees is enclosed. <input checked="" type="checkbox"/> Please charge my Deposit Account No. 07-1392 in the amount of \$840.00 to cover the above fees. A duplicate copy of this sheet is enclosed. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 07-1392 A duplicate copy of this sheet is enclosed.		
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.		
SEND ALL CORRESPONDENCE TO:		
David J. Levy, VP Glaxo Wellcome Inc. Global Intellectual Property Dept Five Moore Drive, PO Box 13392 Research Triangle Park, NC 27709 Telephone: 919-483-2370 Fax: 919-483-7988		
 23347 PATENT TRADEMARK OFFICE		
 SIGNATURE Christopher P. Rogers NAME 36,334 REGISTRATION NUMBER 29 Sept 2000 DATE		

09/647405
430 Rec'd PCT/PTO 29 SEP 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Geralt WILLIAMS
International Application No.: PCT/FR99/00695
International Filing Date: 25 March 1999
Title: METERING VALVE

Commissioner of Patents
Washington, D.C. 20231

FIRST PRELIMINARY AMENDMENT

Dear Sir:

The above identified application is being transmitted herewith for entry in the US National Phase under Chapter II of the PCT for the purpose of adding the priority information. Please amend the application as follows:

In the Abstract:

Please substitute the attached Abstract, which has been placed on a separate sheet of paper according to US practice, as required under 37 CFR 1.72(b)

In the Specification:

On the first line of the specification, after the Title, please add:

--This application is filed pursuant to 35 U.S.C. §371 as a United States National Phase Application of International Application No. PCT/FR99/00695 filed 25 March 1999, which claims priority from FR98/03926 filed 30 March 1998 in France.--

In the Claims:

In Claim 3, line 1, delete "and 2"

In Claim 4, line 1, delete "any of the preceding claims" and replace with --claim 1--

In Claim 6, line 1, delete "any of the preceding claims" and replace with --claim 1--

In Claim 8, line 1, delete "or 7"

In Claim 10, line 3, delete "one of the preceding claims" and replace with --claim 1--

REMARKS

Applicants have attached an abstract on a separate sheet of paper as required by US practice. Applicants have amended the specification for purposes of adding the priority information. The claims have been amended to place them in form appropriate to US practice and to reduce the filing fee by removing multiple dependency.

Respectfully submitted,

Date: 29 Sept. 2000

By:

Christopher P. Rogers
Attorney of Record, Reg. No 36,334



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Global Intellectual Property Department
Five Moore Drive, PO Box 13398
Research Triangle Park, NC 27709-3398
Telephone: 919-483-6983
Fax: 919-483-7988

METERING VALVE

ABSTRACT

The invention concerns a metering valve for dispensing a pharmaceutical product, comprising in particular a valve body (1), a metering chamber (2) and a valve stem (10) sliding in said metering chamber (2) between an inoperative position and an actuating position. The invention is characterised in that at least part of said metering valve is made of a material adapted to reduce the possibility of the product being deposited, adhering and/or bonded on the valve.

Metering valve

The present invention relates to an improved metering valve.

Valves are well known in the state of the art. They find their principal application in aerosol containers for delivery of liquid products which are charged with propellant (gas under pressure). When they are in the form of metered dose valves, they generally consist of a valve body enclosing a metering chamber bound axially by two ring seals, a valve seal and a chamber seal, and a valve stem movable between a rest position and an actuation position. This stem is held by a spring in the rest position in which the shoulder of the aforementioned stem presses against the lower surface of the aforementioned valve seal. To actuate the metering valve one presses on the stem, which slides into the valve body inside the seals up to its actuation position, in which a dose of the product is expelled. This spring then returns the stem to its rest position. Metering valves of this type are described in documents EP-0 551 782, FEP-0 350 376, FR-2 615 172, FR-2 615 173 and FR-2 615 124.

15

The document FR-2 740 527 discloses a metering valve in which, in order to avoid a risk of blocking the stem in the seal assembly, one constructs the stem out of a material containing PTFE mixed with other materials.

20

One problem which arises with metering valves concerns notably the precision and reproducibility of the dose expelled at each actuation. Indeed, depending on the product to be dispensed, notably when it consists of a pharmaceutical product, these two parameters can be crucial for the efficacy of the treatment. Here, the pressure generated in the valve by the gas propellant and/or the physico-chemical properties of the aforementioned gas propellant can bring about accumulation, adhesion and/or coating of the product on different constituent parts of the metering valve. Thus the precision and reproducibility of the dose are not always guaranteed. Furthermore, a part of the product contained in the container runs the risk of not being dispensed, which risks limiting the efficacy of the treatment, and may be disadvantageous from

the economic point of view if the product in question is costly. In addition, accumulation, adhesion and/or coating of the product on certain parts of the metering valve may alter considerably the functioning and reliability of the aforementioned metering valve (a phenomenon known as sticking of the stem, which becomes 5 blocked) or the replenishment of the metering chamber (constriction of the refill conduit, which can be very narrow).

These phenomena are amplified further when, notably for ecological reasons, one wishes to replace gas propellants harmful to the environment, such as the CFCs, 10 by gas propellants which are not harmful, or less so, such as the HFA gases. Indeed, the use of such non-harmful or less harmful gases entails an increase in pressure in the interior of the valve body. Moreover, the physico-chemical properties of this type of gas propellant can predispose to accumulation, adhesion and/or coating of product.

15 One aim of the invention is to provide a metering valve which guarantees the precision and reproducibility of the dose of product expelled at each actuation.

20 Another aim of the invention is to provide a metering valve functioning in a certain and reliable manner to guarantee the expulsion of the totality of product contained in the vessel upon which the valve is mounted.

Yet another aim of the invention is to provide such a metering valve functioning with a gas less harmful to the environment.

25 The invention has, therefore, as its objective a metering valve for dispensing a pharmaceutical product, consisting notably of a valve body, a metering chamber and a valve stem sliding into the aforementioned metering chamber between a position of rest and a position of actuation, with at least a part of the aforementioned metering valve being made of a material adapted to reduce the deposition, adhesion and/or 30 coating of the product on the valve.

Preferably, the aforementioned metering chamber is made of a material adapted to reduce the deposition, adhesion and/or coating of product on the aforementioned metering chamber, in particular on its wall.

5 Advantageously, the aforementioned valve stem is made of a material adapted to reduce the deposition, adhesion and/or coating of product on the aforementioned valve stem.

10 Advantageously, all the components of the valve are made of a material adapted to reduce the deposition, adhesion and/or coating of product on the valve.

In particular, all the components of the metering valve contain the same material adapted to reduce the deposition, adhesion and/or coating of the product on the valve.

15 Preferably, the material adapted to reduce the deposition, adhesion and/or coating of the product contains a fluorinated polymer.

20 Advantageously, this polymer is composed essentially of a fluorinated polymer.

Preferably, this polymer contains polytetrafluoroethylene (PTFE).

25 Advantageously, this polymer consists essentially of polytetrafluoroethylene (PTFE).

30 In addition, the present invention has as its objective a device for the dispensing of a liquid product consisting of an aerosol container containing the product and a propellant gas, and a metering valve made according to one of the preceding claims, mounted on the aforesaid container for the selective dispensing of the said product, said propellant gas being an HFA gas.

Other characteristics and advantages will appear during the course of the following detailed description of the invention, acting as a non-limiting example in regard to the accompanying drawings in which:

5

- figure 1 is a schematic view in section of a metering valve according to a particular mode of realisation, the valve stem being in a position of rest, and
- figure 2 is a view similar to that in figure 1, the valve stem being in its actuation position.

The invention will be described with reference to an example of a metering valve represented in the drawings, but it is clear that it applies to metering valves of all types.

15

With reference to figures 1 and 2, a metering valve can consist of a valve body 1 enclosing a metering chamber 2. This chamber 2 may be bound axially by two ring seals, a valve seal 3 and a chamber seal 4. These two seals can each contain a central opening through which a valve stem 10 passes, which can move inside the valve body 20 between a position of rest, shown in figure 1, and a position of actuation, shown in figure 2. This valve stem may be held in the rest position by an elastic component such as a spring 5, one part pressing against the base of the valve body 1 and the other part against the lower end of the valve stem.

25

The valve body 1 may be set in a capsule 100 which is then secured, for example by crimping, to the collar of a vessel or bottle of some sort (not shown). Advantageously, a collar seal 101 is envisaged between said capsule 100 and said collar of the container.

30

The valve stem generally contains a dispensing channel 12 opening through a radial hole 13 to the outside. In the rest position of the valve stem, said radial hole 13

opens to the exterior of the valve seal 3, while in the said actuation position it opens to the interior of the metering chamber 2.

5 The valve stem 10 may have, in addition, a radial shoulder which presses against the lower surface of the valve seal 3 in the rest position of the valve stem 10, and which defines the said rest position in acting as an agent of closure against the pressure of the spring 5.

10 The valve stem 10 also contains advantageously a conduit 14, which in the rest position of the valve stem, connects a reservoir or container of product (not shown) with the metering chamber 2 allowing the latter to be refilled, while in the position of actuation of the valve stem, it does not open into the metering chamber 2.

15 This metering valve functions in a standard manner. The user exerts pressure on the valve stem 10 which has the effect of displacing the latter, against the force of the spring 5, from its position of rest. Once this displacement has begun, the conduit 14 no longer opens out into the metering chamber 2, and the latter is then hermetically sealed by the valve stem 10 at the level of the chamber seal 4 and the valve seal 3. When the valve stem 10 arrives in its position of actuation, the radial hole 13 of the 20 valve stem opens into the metering chamber 2, thus allowing the dispensing of the dose of product contained in said metering chamber via the intermediary of the dispensing channel 12. The user releases the pressure on the valve stem 10, which is returned by the spring 5 to its rest position, where the conduit 14 opens into the metering chamber 2, in order to refill the latter with a new dose of product.

25

To guarantee the precision and reproducibility of the dose, and to avoid problems of blockage of the valve stem 10 (sticking) and constriction of the refill conduit 14 of the metering chamber 2, the invention envisages that all or part of the metering valve is made of a material adapted to reduce, preferably to prevent, the 30 deposition, adhesion and/or coating of product.

Preferably, the metering chamber 2, notably its walls, is made of such a material, but other components of the metering valve, such as the valve stem 10 or the valve body 1 can also be made of such material.

5 A material particularly adapted for the invention consists of or contains a fluorinated polymer. This polymer preferably consists of or contains polytetrafluoroethylene (PTFE). Other appropriate fluorinated materials comprise fluorinated ethylene propylene (FEP) and a copolymer of PTFE (PFA).

10 Advantageously, the same material may be used to make the different parts of the metering valve.

15 Thus, the invention allows one to make a metering valve in which the metering chamber 2 fills in a very precise manner after each actuation of the valve and the majority, if not the totality, of the contents of the metering chamber is expelled at each actuation such that the dose is very precise and reproducible. Furthermore, the fact that the product does not coat on the valve stem 10 and/or the seals 3 and 4 allows one to avoid problems with blockage by rubbing of the said stem and so improves the reliability of the valve.

20 The invention has been described with reference to the figures which show a particular metering valve functioning in the upright position, but it clearly applies to all metering valves, notably also those functioning in the inverted position.

Claims:

1.- A metering valve for dispensing a pharmaceutical product, comprising
5 notably a valve body (1), and metering chamber (2) and a valve stem (10) sliding in
said metering chamber (2) between a position of rest and a position of actuation,
characterised in that at least one part of said metering valve is made of a material
adapted to reduce the deposition, adhesion and/or coating of product on the valve.

10 2.- A metering valve according to claim 1, in which said metering chamber
(2) is made of a material adapted to reduce the deposition, adhesion and/or coating of
product on said metering chamber.

15 3.- A metering valve according to claims 1 and 2, in which said valve stem
(10) is made of a material adapted to reduce the deposition, adhesion and/or coating of
product on said valve stem.

20 4.- A metering valve according to any of the preceding claims, in which all the
components of the metering valve are made of materials adapted to reduce the
deposition, adhesion and/or coating of product on the valve.

5.- A metering valve according to claim 4, in which all the components of the
metering valve are made of the same material adapted to reduce the deposition,
adhesion and/or coating of product on the valve.

25 6.- A metering valve according to any of the preceding claims, in which said
material adapted to reduce the deposition, adhesion and/or coating of product contains
a fluorinated polymer.

30 7.- A metering valve according to claim 6, in which said material consists
essentially of a fluorinated polymer.

8.- A metering valve according to claim 6 or 7, in which said material contains polytetrafluoroethylene (PTFE).

5 9.- A metering valve according to claim 8, in which said material consists essentially of polytetrafluoroethylene (PTFE).

10 10.- A device for dispensing of a fluid product comprising an aerosol container containing the product and a propellant gas, and a metering valve made according to ~~one of the preceding claims~~, ^{claim} mounted in the said container for selective dispensing of said product, in which the propellant gas is an HFA gas.

1/2

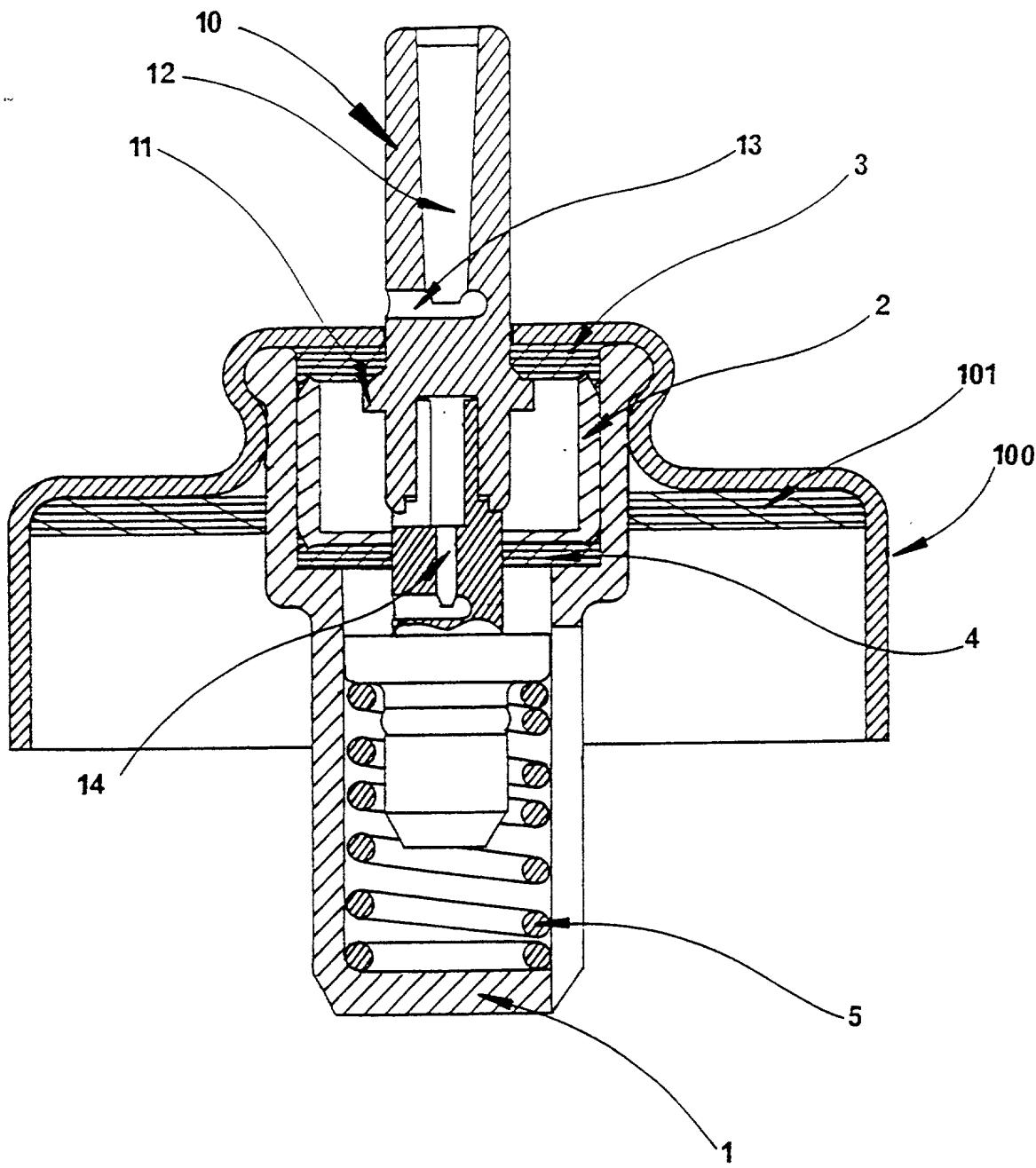


FIG.1

2/2

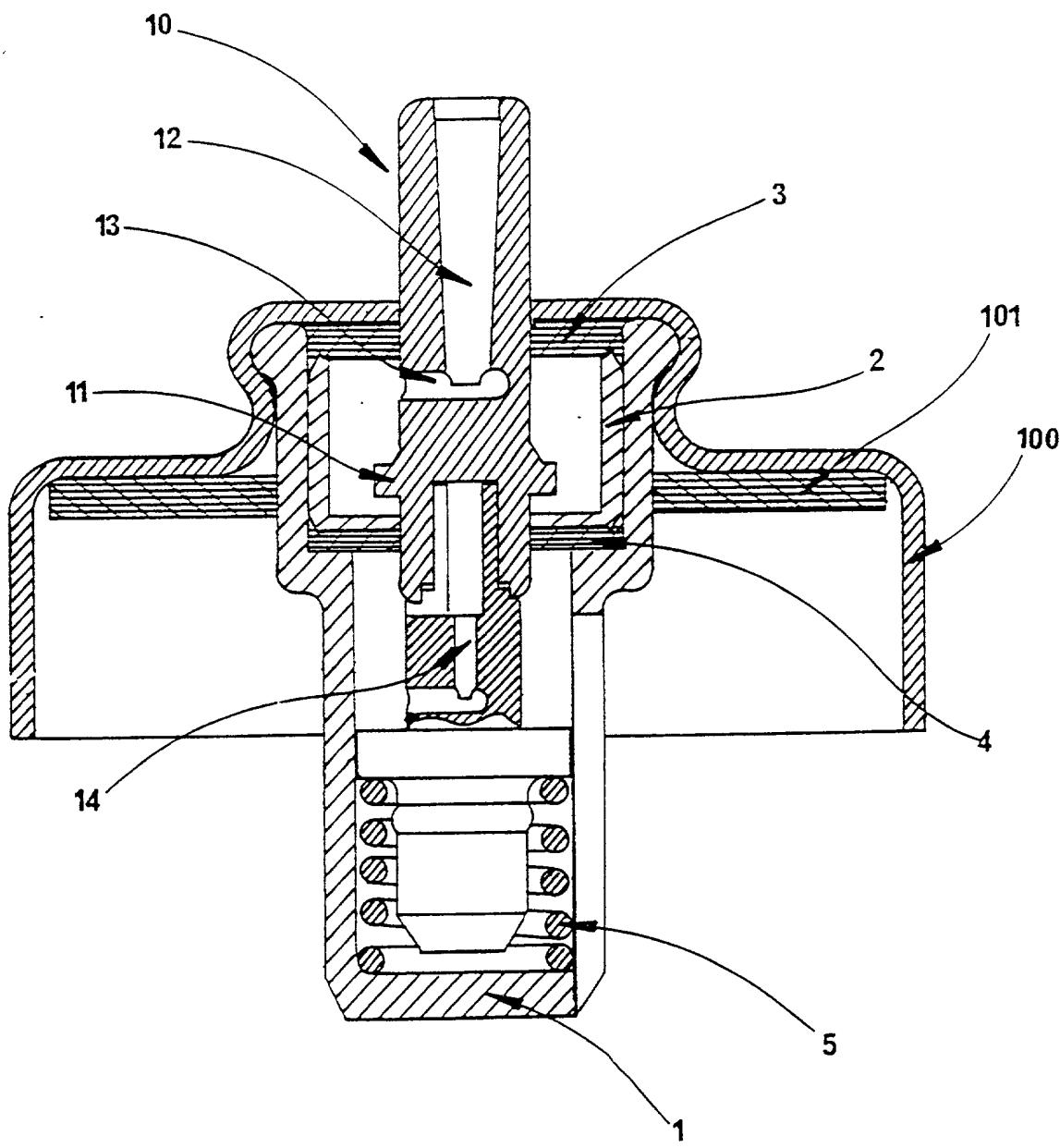


FIG.2

**COMBINED DECLARATION FOR UTILITY OR DESIGN PATENT
APPLICATION WITH POWER OF ATTORNEY**
ATTORNEY'S DOCKET
PX3904USWFirst Name Inventor:
Géralt WILLIAMS**Complete if known:**
App No.:Filing Date
29 September 2000

Group Art Unit:

(X) Declaration submitted with initial filing or
() Declaration submitted after initial filing (surcharge required 37CFR1.16(e))

As below named inventor. I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METERING VALVE

the specification of which (check only one item below):

[] is attached hereto.
OR

[x] was filed on 25 March 1999 as United States application Serial No. _____ or PCT International

Application Number PCT/FR99/00695 filed and was amended on (MM/DD/YYYY) _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35, U.S.C. §119 (a)-(d) or §365(b) of any foreign applications(s) for patent or inventor's certificate or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or of any PCT international application having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

Prior Foreign Application Number (s)	Country	Foreign Filing Date (MM/DD/YYYY)	PRIORITY CLAIMED
1.9803926	FR	30 March 1998	X
2.			
3.			
4.			
5.			

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below:

Application No.	Filing Date (MM/DD/YYYY)
1.	
2.	
3.	
4.	
5.	

COMBINED DECLARATION FOR UTILITY or DESIGN
PATENT APPLICATION WITH POWER OF ATTORNEYATTORNEY'S DOCKET NUMBER
PX3904USW

Continued

I hereby claim the benefit under 35, U.S.C. §120 of any United States application or §365(c) of any PCT international application designating the United States of America that is listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. PARENT APPLICATION or PCT PARENT APPLICATION

		STATUS (Check one)		
U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	PATENTED	PENDING	ABANDONED

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the U.S. Patent and Trademark Office connected therewith. (List name and registration number)

David J. Levy Reg. No. <u>27,655</u>	James P. Riek Reg. No. <u>39,009</u>	Bonnie L. Deppenbrock Reg. No. <u>28,209</u>
Charles E. Dadswell Reg. No. <u>35,851</u>	Virginia C. Bennett Reg. No. <u>37,092</u>	John L. Lemanowicz Reg. No. <u>37,380</u>
Karen L. Prus Reg. No. <u>39,337</u>	Frank P. Grassler Reg. No. <u>31,164</u>	
Robert H. Brink Reg. No. <u>36,094</u>	Christopher P. Rogers Reg. No. <u>36,334</u>	
Elizabeth Selby Reg. No. <u>38,298</u>	Lorie Ann Morgan Reg. No. <u>38,181</u>	

Send Correspondence to:	Direct Telephone Calls to:
<u>David J. Levy, Patent Counsel Global Intellectual Property Department Glaxo Wellcome Inc. Five Moore Drive, P.O. Box 13398 Research Triangle Park, NC 27709</u>	Christopher P. Rogers 919-483-1240

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

2	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME/INITIAL
		<u>WILLIAMS</u>	<u>Gerald</u>	
0	INVENTOR'S SIGNATURE	<u>X G. Williams</u>		
0	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	DATE: <u>X 26 Nov 2000</u>
1	POST OFFICE ADDRESS	<u>Le Neubourg</u>	<u>FR</u>	COUNTRY OF CITIZENSHIP <u>FR</u>
2	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME/INITIAL
0	INVENTOR'S SIGNATURE			
2	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
2	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
2	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME/INITIAL
0	INVENTOR'S SIGNATURE			
3	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
3	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY